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Practical considerations in medical cannabis administration and dosing

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- Concise data on cannabis pharmacology related to tetrahydrocannabinol (THC), cannabidiol (CBD) et al., methods of administration (smoking, vaporization, oral), and dosing recommendations

- General approach to cannabis initiation is 'start low, go slow, and stay low'.

Vaporization Dosing:
For cannabis inhalation, patients should start with 1 inhalation and wait 15 min. Then, they may increase by 1 inhalation every 15–30 min until desired symptom control has been achieved.

Oral Dosing:
Ideally, patients should start THC-dominant preparations at bedtime to limit adverse events and encourage development of tolerance. A following regimen is suggested:

- Days 1-2: 2.5 mg THC-equivalent at bedtime (may start at 1.25mg if young, elderly, or other concerns)
- Days 3-4: If previous dose is tolerated, increase by 1.25-2.5 mg THC at bedtime
- Days 5-6: continue to increase by 1.25-2.5 mg THC at bedtime every 2 days until desired effect is obtained. In the event of side effects, reduce to the previous, best tolerated dose.

Some patients require THC for daytime use depending on their symptoms. Consider the following regimen:

- Days 1-2: 2.5 mg THC-equivalent once a day
- Days 3-4: 2.5 mg THC twice a day
- Increase as needed and as tolerated to 15 mg THC-equivalent divided into 2 or 3 doses
- Doses exceeding 20-30 mg/day may increase adverse events or induce tolerance without increasing efficacy.

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Table 1
Cannabis routes of administration.

Cannabis routes of administration			
Smoking	Vaporisation	Oral	Other routes
• Most common route of administration, but not recommended (joints, bongs, pipes, etc.) • Combustion at 600–900 °C producing toxic biproducts: tar, PAH (polycyclic aromatic hydrocarbons), carbon monoxide (CO), ammonia (NH_3). • Chronic use associated with respiratory symptoms (bronchitis, cough, phlegm), but not lung cancer nor COPD (if cannabis only). • Patients may mix with tobacco increasing respiratory/cancer risk • 30–50% of cannabis is lost to 'side-stream' smoke	• Heats cannabis at 160–230 °C. Reduced CO, but not complete elimination of PAH demonstrated to date. • Vaporisation produces significantly less harmful biproducts vs. smoking. • Decreased pulmonary symptoms reported compared to smoking.	• Oils, capsules and other po routes increasingly popular due to convenience and accuracy of dosing. • Edibles (brownies/cookies) may be more difficult to dose. • Juicing and cannabis teas do not allow for adequate decarboxylation of raw plant • Nabiximols oromucosal spray is currently the only cannabis-based prescription that delivers standardised dosage of CBD/THC in a 1:1 ratio with extensive research • Tinctures and lozenges intermediate onset with limited research	• Topicals ideal for localised symptoms (dermatological conditions, arthritis), with limited research evidence • Suppositories possibly indicated for specific populations (cancer, GI symptoms, young/elderly, etc.) with variable absorption. THC-hemisuccinate may allow for best absorption with limited research. • Recreational routes include 'shatter', 'dabs', concentrates. Deliver very high doses of THC with high risk of euphoria, impairment, reinforcement, toxic psychosis, orthostatic hypotension. Inappropriate for medical application.

Table 2
Administration factors in cannabis delivery methods.

Issue	Smoking/vaporisation	Oral	Oromucosal	Topical
Onset (min)	5–10	60–180	15–45	Variable
Duration (h)	2–4	6–8	6–8	Variable
Pro	Rapid action, advantage for acute or episodic symptoms (nausea/pain)	Less odor, convenient and discrete, advantage for chronic disease/symptoms	Pharmaceutical form (nabiximols) available, with documented efficacy and safety.	Less systemic effect, good for localised symptoms
Con	Dexterity required, vaporisers may be expensive, and not all are portable	Titration challenges due to delayed onset	Expensive, spotty availability	Only local effects

Table 4
Adverse events associated with cannabis-based medicines.

Side effect	Most common	Common	Rare
Drowsiness/fatigue	✓		
Dizziness	✓		
Dry mouth	✓		
Cough, phlegm, bronchitis (Smoking only)	✓		
Anxiety	✓		
Nausea	✓		
Cognitive effects	✓		
Euphoria		✓	
Blurred vision		✓	
Headache		✓	
Orthostatic hypotension			✓
Toxic psychosis/paranoia			✓
Depression			✓
Ataxia/dyscoordination			✓
Tachycardia (after titration)			✓
Cannabis hyperemesis			✓
Diarrhea			✓

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